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THE SIMPLICITY OF INFANT FEEDING[1]

McKIM MARRIOTT, M.D.

St. Louis, Missouri

Infant feeding is, in reality, simple, but has been made unnecessarily complex through a lack of understanding of the fundamental factors involved. In the infant, we have to deal with a rapidly growing individual, having a large food requirement, but a limited digestive capacity; a helpless individual, unable to care for or feed himself and unable to make an intelligent selection of food, ready to take any food offered, suitable or unsuitable, up to the limits of his stomach capacity, or beyond. The infant, furthermore, is peculiarly susceptible to infections, some of which, when present, are difficult to detect and to treat and exert a profound effect upon the nutrition.

Since the infant can not choose food for himself, it is necessary to consider carefully the composition of the food in order to meet all of the nutritional requirements, and since the digestive capacity is limited, the choice of foods is necessarily limited to those which are readily digestible. Since the infant is susceptible to bacterial infections in the intestinal tract, as well as elsewhere in the body, it is essential that the food be free from any bacteria capable of causing harm.

Any form of feeding, in order to be successful, must meet the following requirements:

(1) Must provide sufficient calories.
(2) Must contain a certain minimum amount of protein, carbohydrate, mineral salts, water and the four vitamins "A," "B," "C" and "D."

[1] An address given before the American Dietetic Association, St. Louis, Missouri, October 19, 1927. From the Department of Pediatrics, Washington University School of Medicine, and the St. Louis Children's Hospital.

It is of advantage for the food to contain fat and pigment, but these two constituents are not absolutely essential.

(3) Must be free from any considerable number of harmful bacteria.

(4) Must be capable of digestion by the infant, in the amounts given.

Any form of food which meets all of the above requirements will be successful unless the infant is suffering from some disease. Failure to fulfill any one of the requirements results in failure of the feeding as a whole.

Breast milk from a healthy mother, when taken in sufficient amounts by the infant, fulfills all requirements. It is the simplest and the best feeding for the normal baby. It is not necessary to assume any peculiar or mysterious qualities of breast milk in order to explain its superiority over artificial food. It is clean, as it comes direct from producer to consumer, it contains all the necessary food elements, and when taken in amounts up to the infant's stomach capacity is digestible and supplies sufficient calories for the infant's needs.

In the preparation of an artificial food, on the other hand, some of the essential elements are likely to be left out. An insufficient total amount may be given because of dilution of the mixture, or the food may be beyond the digestive capacity of the infant, or may be contaminated by harmful bacteria.

If, however, one has a full realization of the essential qualifications of the diet, it is possible to feed normal infants satisfactorily on mixtures of cow's milk and sugar supplemented after the sixth month with additional articles of diet such as cereals and green vegetables.

Any food, no matter how digestible, will be unsuitable unless it supplies a sufficient number of calories or fuel units. Failure to give sufficient calories has been the cause of more difficulties in infant feeding than any other one factor. A normal infant will rarely thrive unless he receives approximately 50 calories per pound of body weight per day. An undernourished infant will not thrive unless he receives almost as many calories as a normal infant of the same age. For example, a normal infant of six months, weighing 15 pounds, will need approximately 15×50, or 750 calories a day; an undernourished infant of six months, weighing only 8 pounds, will also require very close to 750 calories, which will be almost 100 calories per pound. The calculation of calories in the diet is extremely simple. Milk contains 20 calories per ounce and sugar 120 calories per ounce.

The second requirement for successful infant feeding is that the diet must contain certain essential elements in sufficient amounts. These

are protein, carbohydrate, mineral salts and vitamins. The requirements for protein, mineral salts, (except possibly iron) and some of the vitamins are met if the infant receives one and one-half ounces of cow's milk per pound of *expected* body weight per day, or one-tenth of the body weight. With lesser amounts of milk than this, nutritional disturbances are likely to result, although an infant may, for a time, thrive on as little as 1 ounce of milk per pound of body weight.

Additional carbohydrate in the form of sugar should be added. The proportion between milk and sugar is of importance, the optimum proportion being approximately 11:1. Too little sugar results in a slow gain in weight, a tendency to constipation and involves the necessity of taking excessive amounts of fat and protein to make up the necessary calories. Too large an amount of sugar in proportion to the milk may lead to a condition of rapid gain in weight, hydremia and lack of resistance to infection, these effects being due to a deficiency of the milk, as much as to an excess of carbohydrate, for when there is too much sugar present the appetite is satisfied and the caloric needs are met without at the same time meeting the needs of the body for the other constituents of the milk.

When the amounts of milk indicated are given, there is no deficiency of the "B" vitamin. Additional "A" and "D" vitamins should, however, be supplied in the form of cod liver oil, one-half teaspoonful 3 times a day, during the first half of the first year, and 1 teaspoonful 3 times a day afterwards. One to two tablespoonfuls of orange juice, given daily, will supply the necessary "C" vitamin and should be administered to all artificially fed babies. Fat is a valuable constituent of the diet, as it has a high caloric value. It is less readily digested than either protein or carbohydrate, but the amount of fat in average whole cow's milk (mixed herd) is not beyond the digestive capacity of the infant when the quantities of cow's milk given are those recommended above. It is not necessary to enrich milk by cream additions or to skim the milk used for infant feeding.

Pigment, such as is contained in green vegetables, is valuable in that it provides part of the constituents of the hemoglobin molecule. Infants receiving green vegetables from the sixth month on are less likely to be anemic at the end of the first year than those fed exclusively on milk.

The third requirement is that the food must be uncontaminated by harmful bacteria. A satisfactory method of accomplishing this is to boil all milk given to the infant. The boiling also renders the food more digestible and does not impair its nutritional value. Pasteurization is

somewhat less effective. Raw milk should, under no circumstances, be fed to babies. *Unsweetened* evaporated milk is of especial value because of its absolute sterility.

In general, cow's milk is not as readily digested by young infants as is breast milk although many infants can take undiluted cow's milk, in approximately the same amounts as breast milk without digestive disturbances. As there are many infants who cannot digest such an amount of cow's milk, it is usually necessary to feed smaller amounts at a time and this is accomplished by diluting the milk with water. This insures the baby's taking a smaller actual amount of milk, even though the stomach be filled with the dilute mixture.

The relative indigestibility of cow's milk is largely due to the presence of a "buffer substance" capable of neutralizing the gastric juice and intestinal secretions. An effective means of eliminating the influence of the buffer substances in cow's milk is neutralization with some form of acid. Lactic acid is especially suitable for this purpose. If cow's milk is soured by the growth of lactic acid producing organisms, such as the Bacillus acidophilus, or the Bulgarian bacillus, or if sterilized cow's milk is acidified by the addition of a small amount of pure lactic acid, the milk becomes approximately as digestible as breast milk, and can be fed in the same amounts, that is to say, it can be fed safely without dilution even to young infants up to the stomach capacity.

In applying the principles mentioned to the practical feeding of infants, a satisfactory formula for use during the first year is prepared by adding 3 ounces of sugar to one quart of milk. This provides the proper proportion between sugar and milk. The most satisfactory form of sugar, as well as the cheapest, is ordinary Karo corn syrup. This is the commerical food product obtainable in grocery stores. It is a mixture of dextrin and maltose with some glucose and a little cane sugar. It is prepared by the hydrolysis of starch. The dextrin is not readily fermented by intestinal bacteria and the maltose and glucose are quickly absorbed. This form of sugar can be fed safely in somewhat larger amounts than cane sugar. It is at least as good as many of the prepared malt baby foods and far cheaper. Ordinary cane sugar may be substituted for the Karo syrup, without any special harm, in the case of most normal infants. There is no need for the expensive forms of baby food.

When sweet cow's milk is used, the milk and sugar mixture mentioned should ordinarily be diluted with an equal volume of water in the case of infants under one month of age, or infants unaccustomed to cow's milk.

After that age the water should be gradually decreased and the milk correspondingly increased until at about four months the infant will be receiving two-thirds milk and one-third water and by the age of nine or ten months undiluted milk. Putting it in another way, the young infant may be given milk diluted with an equal volume of water and with the addition of one-tenth of an ounce of sugar for each ounce of milk in the final mixture. After six months of age, when cereals are added to the diet, from one-third to one-half of the sugar may be omitted. Some infants will be able to take the sweet milk mixtures undiluted much earlier than others, perhaps by the second month. This will depend upon the individual digestive capacity. The bottle should not be offered more often than every three and a half to four hours, preferably every four hours, and the infant given as much as he will take readily.

Unsweetened evaporated milk possesses a number of advantages over ordinary cow's milk for the preparation of the milk formulas mentioned. The chief advantage of evaporated milk is that it has already been completely sterilized and because of the heat treatment it forms very fine curds in the stomach. The fat present has been homogenized so as to form very fine globules. It is of uniform composition, easily obtainable and is cheap, and when used in the preparation of formulas does not require further sterilization. Evaporated milk is whole cow's milk from which a little more than one-half of the water has been separated. In making up the formulas, therefore, the evaporated milk should first be diluted with an equal volume of water to give the equivalent of whole milk and then used exactly as ordinary milk. Or, putting it in other words, one-half as much of the evaporated milk should be used as whole milk and the difference made up with water. Because of the easier digestibility of evaporated milk, the formulas can safely be made somewhat stronger than in the case of ordinary milk. *Evaporated* milk should not be confused with sweetened *condensed* milk, which latter is prepared by the addition of a considerable amount of cane sugar and can, therefore, not be used in the same way.

When acidified milk is used instead of sweet milk, no dilution is necessary nor even desirable. The proportions of sugar and milk are 3 ounces to the quart and the baby is given all he will take at four-hour intervals throughout the first year. As this type of food is concentrated, supplying a great many calories, it is not necessary to give more than 5 feedings a day after the first month and many infants, after the second month, will do well on only four feedings a day and will not wake up from hunger during the night. The same formula is used throughout the first year

with the exception that the sugar is decreased as cereal starches are added to the diet during the latter half of the first year.

In preparing the lactic acid milk and sugar mixture, one may start with bacterially soured whole milk; or, in case this is not obtainable, milk soured with U. S. P. lactic acid may be substituted. The method of preparation of the latter is as follows: one quart of milk is brought to a boil and *thoroughly* cooled. The scum is removed and 1.5 drams (6 cc.) of lactic acid, U. S. P. (75 to 85 per cent) is added, drop by drop, while the milk is stirred. The first half of the acid may be added rapidly, but the remainder must be added slowly. If the acid is mixed with 2 or 3 ounces of water or with water and corn syrup it may be poured in quite rapidly without forming large curds. It is important in any event that the milk should be thoroughly cold before the acid is added. After the milk is acidified, 3 ounces by volume of corn syrup is stirred in and the feeding bottles for the day are filled. The infant may be offered as much as he desires at four-hour intervals. There is little or no danger of overfeeding on this type of formula.

A formula having the same general composition as that just described may very conveniently be made from unsweetened evaporated milk.

In using evaporated milk for the preparation of lactic acid milk formulas, the usual dilution is 1:1, as evaporated milk is approximately doubly concentrated. To the half diluted milk, 10 per cent by volume of Karo syrup is added and then ten drops of lactic acid, U. S. P. to each ounce of evaporated milk used in the mixture, or five drops to each ounce of the final mixture.

A preferable method of preparing the formulas and one that we have generally used consists in the mixing of evaporated milk with an equal volume of an acid-sugar mixture. The formula which we have used almost as a routine is prepared as follows:

Acid-sugar solution

Karo corn syrup (brown)	90 cc. (3 oz. (6 tablespoonfuls))
Lactic acid, U. S. P.	5 cc. (1 teaspoonful)
Water	to 500 cc. (1 pint)

The syrup is mixed with some water, the lactic acid added, and the whole made up to the final volume. The mixture should, if possible, be kept in a cool place, but on account of its high acid content, it keeps perfectly for one or two days, even at ordinary temperatures. In making up the feedings, equal parts of unsweetened evaporated milk and the

acid-sugar solutions are mixed. This is done by pouring the acid solution into the milk, which is then mixed by stirring or shaking. An entire day's feeding may be prepared at one time, or, as is often more convenient when traveling, a single small can of evaporated milk may be opened fresh for each feeding, the feeding bottle being half filled with the milk and the acid-sugar solution then poured in. The bottle then needs merely to be shaken, warmed to body temperature and is ready for feeding.

The formula given is the usual one for babies during the first six or eight months. It can, of course, be varied in individual instances. The amount of sugar is decreased after cereal is taken. The formula as prepared is equivalent to whole lactic acid milk with approximately 10 per cent added sugar. The fuel value is 30 calories per ounce.

The simple mixtures recommended are all that are necessary for the feeding of normal and most sick infants, and are superior to any of the patented baby foods on the market.

If an infant who has been fed properly, and has been thriving, suddenly begins to vomit, or develops diarrhea, it may be safely assumed that the food is not at fault. A frequent cause of vomiting and diarrhea in such infants is bacterial infection, which may be either within or outside of the intestinal tract. The majority of the so-called digestive disorders of infants occurring during the cooler months of the year are the result of infections in the nose, throat and ears. A smaller number are due to pyelitis or to the more serious infections such as bronchitis and pneumonia. When vomiting and diarrhea occur in a baby properly fed, no change in the feeding should be made, but a careful physical examination should be undertaken.

Infants who fail to thrive or succumb to the familiar condition known as "marasmus" sometimes suffer from congenital anomalies such as malformations of the heart. In the great majority of instances, however, failure to thrive is due to an insufficient number of calories in the diet or an insufficient amount of milk, or to the presence of chronic unrecognized infection. The indications for treatment are simple, the giving of a food meeting the four requirements previously mentioned and the elimination of sources of infection.

In conclusion, the successful treatment of infants consists in the giving of simple food providing a sufficient number of calories, the necessary proportions of milk and sugar and the essential vitamins; the food should be within the limits of the capacity of the infant's digestion and free from harmful bacteria. This can be accomplished by the use of simple mix-

tures of milk and sugar. When digestive difficulties occur, they will not be due to the food, if the qualifications mentioned above have been met, but will be due to some extranuous conditions, most likely infections, which should be sought for and remedied; the food need not usually be changed.

BREAST MILK—A VARIABLE FOOD[1]

ICIE G. MACY, PH.D., AND JULIA OUTHOUSE, M.S.

The superiority of breast over artificial feeding during the early months of infancy has long been recognized. Woodbury (1) in his recent study of "Infant Mortality and Its Causes" shows convincingly that evidence favors breast feeding during the early months of life, and that artificial feeding is attended with excessive mortality. An analysis of the death rates by cause of death discloses that the excess mortality among infants artificially fed was greatest from gastric and intestinal diseases, disturbances especially connected with improper feeding. Not only were the rates from gastric and intestinal diseases markedly higher, but the rates from all the other principal causes appeared to be greater among the artificially fed than among breast-fed infants. Among those artificially fed the death rate from respiratory diseases averages 85 per cent higher than among breast-fed babies. All other causes rate two or five times greater in artificially fed than among breast-fed babies. These statistics illustrate the profound importance of breast feeding during the early months of infancy.

It would seem that nature would always provide an ideal baby food for the nutrition of the infant during the first few months of life. Breast milk, however, may fall short of being an adequate food, hence failing to meet all the needs of the baby. While death may not occur, growth and development may be far from optimal. It is a well-known fact that one type of milk can not be adapted for universal use, since the factors influencing the development of every individual may vary markedly. But in general, it may be said that the poorest grade of breast milk is superior to the less desirable types of artificial feeding, particularly those foods that may be secured from the corner store and administered according to the directions given on the can and without the advice of a physician. Studies now being carried on by the staff of the Nutrition Research Laboratories of the Merrill-Palmer School and the Children's

[1] From the Nutrition Research Laboratories of the Merrill-Palmer School and the Children's Hospital of Michigan, Detroit. Received for publication March 16, 1928. Presented at the tenth annual convention of the American Dietetic Association in St. Louis, October 19, 1927.

Hospital of Michigan in Detroit indicate that the quality and quantity of breast milk produced may depend upon a variety of factors.

Let us consider first the quantity of milk and some of the factors affecting it. Little is known regarding the hereditary factors which may operate in the human species as they do in the dairy industry. Psychic factors are known to play an important rôle in human milk production. Anxiety or mental disturbance of any nature, such as the financial, economic, and health status of the family, may materially reduce the quantity of milk usually produced. During the progress of our human milk studies (2, 3, 4) we have met with two illustrative cases. A temporary reduction in quantity of milk produced in a twenty-four-hour period resulted in one woman, from anxiety over the sudden disappearance of her child, in another from fright caused by a slight automobile accident. Such demonstrations suffice to illustrate the significance of the psychic factor in human milk production.

It has been observed in our laboratories, too, that the quantity output of milk may be influenced in other ways. A reduction in liquid intake, failure to completely empty the breasts at given intervals, and over work, all have a tendency to lower quantity production. We know also that the quantity varies during the different stages of lactation (5), little milk being produced in the beginning, with maximum production around the third month, with a slow decrease in the latter months. The total quantity varies throughout the different periods of the twenty-four-hour day. Furthermore, a difference may be noticed in the capacity of the two breasts to secrete milk, the right one may continuously secrete a larger volume than the left for one woman, whereas the reverse order may be true for another woman.

There are few quantitative studies concerning the effect of quality and quantity of the food consumed upon the amount of breast milk produced. It has been demonstrated in our biological work that successful lactation in the rat is always accompanied by an increase in the amount of food, two or three times above the normal level. Observations are being made upon the human mother to determine if she likewise needs more food to elaborate milk in larger quantities.

The quality of milk may vary from the standpoint of chemical constituents and biological properties. Here again the psychic factor may play a rôle. In our experience one woman who was accustomed to producing milk of satisfactory quality as illustrated by chemical analyses suddenly lost this ability when sickness and reversed financial conditions occurred within the home. The quantity production was not appreciably affected,

but the milk secreted during the psychic strain was very inferior in fat, total protein, solids, and ash, as well as in calcium and phosphorus. It is not known whether these results were due to the psychic factor alone or to changed dietetic or hygienic conditions with a concomitant lowering of physiological efficiency. Knowledge regarding the effect of the psychic factors upon the character of milk secreted is still to be desired.

Chemical studies now in progress indicate tendencies toward a considerable variation in the composition of milk from the same individual during the different stages of lactation (5), during different periods of the day and night, during the period of an individual nursing, i.e., the first and last half of nursing. These data have not been sufficiently analyzed to warrant a detailed discussion at the present time, but they will be reported in full in the near future. There is sufficient evidence, however, to make the statement that breast milk from the same individual may vary considerably from time to time, and that there are external factors operating which may markedly alter milk production, consequently influencing the quality and quantity of the milk received by the infant. It is of interest, too, that milk from different women may vary and that this individuality in composition may persist throughout lactation and still allow for normal growth in the babies fed upon it.

The quality of milk may vary from the standpoint of its biological properties. Clinical experience demonstrates that breast milk is not always adequate in respect to its necessary vitamins. It has been shown time and again in the dairy industry, in rats, in puppies, etc., first, that milk may not always be complete in respect to the essential growth-promoters and disease-protectors; second, that the body is unable to elaborate them; third, that they appear in the milk only as they are contained in the maternal dietary. The influence of diet upon the composition of human milk has long been a debated question, and scientific contributions concerning it are very few.

Average human milk, that is, the pooled milk of many individuals, contains an abundance of vitamin A, the protector against xerophthalmia, 2 to 3 cc. being sufficient to supply the daily growth requirements of rats (3). Experiments carried out on samples of milk from individual women indicate that the vitamin A content may vary considerably and still be apparently adequate to supply all the requirements of the child. Subnormal variations are frequently seen. Kennedy, Palmer, and Schultz (6) have on record a lactating woman who by choice selected a diet consisting largely of tea and toast. Her baby showed some nutritive disturbances but when samples of the milk were fed to rats as a sole source

of vitamin A, the animals promptly showed all symptoms of inadequate supply of this accessory factor.

In vitamin A studies the storage factor is an important one. One of the most interesting stories produced in our laboratories has been a study of the off-spring of rats reared on a minimum amount of human milk as the sole source of vitamin A. Two to three cubic centimeters of this milk are sufficient to allow for growth and reproduction; that it is far below the minimum requirement for lactation is shown by the conduct of the baby rats born and reared on this supply, and later placed on a vitamin A-free dietary. Instead of the average thirty-five days required to exhaust the body storage of this factor, growth ceased practically at once. Within six to twelve days xerophthalmia was present in advanced form, and upon autopsy abscesses were found in the salivary glands, in the tissues at the base of the tongue, in the soft palate, and in the mastoids, all of which are evidences of the advanced stages of vitamin A deficiency. The rapidity with, and the extent to which these pathological lesions had developed indicate a deficiency of vitamin A in the rat mother's milk, as well as a marked lowering of this factor which is normally supplied to the young *in utero*. From such a demonstration it is possible to visualize a similar condition in the human mother. If the diet of the mother is not adequate in quality and quantity her young may not receive the heritage of a normal storage of vitamin A during the prenatal period; the mother may be unable to secrete a milk that is adequate in vitamin A content; both conditions may exist.

Clinical experience demonstrates that in the Orient women with beri beri produce milk deficient in vitamin B with the inevitable result of beri beri in their infants. These conditions are paralleled by animal experimentation where we find that on vitamin B-low diets milk may be secreted, as seen in the digestive tracts of baby rats, but so low in vitamin B content that within a week's time the little rats have developed paralysis and loss of equilibrium, and have failed to grow. Such conditions are symptoms of vitamin B-deficiency. All milks are relatively poor sources of vitamin B, 30 cc. of average human milk or 20 cc. of cow's milk being required to supply the vitamin B requirements of a growing or pregnant rat. We have studied samples of milk from two normal women whose babies were growing satisfactorily and found that the milk of one woman was below the average in vitamin B content, when tested on rats. This probably indicates a great factor of safety in the vitamin B content of milks, i.e., apparently satisfactory growth may be secured in babies although the vitamin B content may be below average. At the

same time, when additional amounts of this vitamin are fed to babies the response in growth is frequently quite startling.

A recent number of Science (7) carries a statement from Professor L. F. Meyer of Germany to the effect that human milk contains more vitamin C than cow's milk. Normally this amount is small and is known to fluctuate according to the vitamin C content of the maternal diet. Although few babies exhibit marked scrobutic lesion, little is known concerning the borderline conditions. It is, therefore, important to supplement infant dietaries with substances rich in vitamin C, such as orange or tomato juice.

In a survey of the antiricketic factor in milks we are confronted with the interesting facts that average human milk contains little or none of this substance, while cow's milk does. Nevertheless, relatively fewer breast fed babies have rickets than artificially fed infants. Kennedy and Palmer (8) believe that this factor may appear in the milk only as it appears in the maternal food. Hess (9), however, has shown with rats and with humans that the antiricketic factor in cod liver oil does not pass through the gastro-intestinal tract into the milk in appreciable quantities but that irradiation of a lactating woman did cause her milk to become of antiricketic value as tested on rats. Thus environmental factors are shown to play a part. As is true with vitamin C, one should not depend upon the milk to supply babies with this substance protecting against rickets.

The above examples adequately illustrate that the vitamins in human milk may vary considerably, and that their presence in milk is dependent in the main upon the maternal food supply. Although there is evidently a great factor of safety as far as vitamins A and B are concerned, it is of great importance to assure an abundance of these substances in the dietary of the rapidly developing infant. This is particularly important since there is a greater demand for those specific vitamins during growth than are necessary for the maintenance of vigor and body weight. If such dietary supplements are made, infants will have a greater opportunity for growth and development and fewer health disturbances.

Lack of satisfactory food, exercise, fresh air, and sunshine, and a condition of constant mental and physical fatigue of the mother during the prenatal and postnatal periods may manifest their ill effects in various ways. Thus the mother may be unwilling, unprepared, or unable to produce satisfactory milk for the entire lactation period. The child, on the other hand, may be so developed that it is unable to derive and utilize all of its requirements from the mother's milk.

If every healthy mother would make an untiring effort to suckle her young, infant mortality would be greatly reduced. For the welfare of herself and her baby she should be as free as possible from over-work, undue anxiety, excitement, and irregularity. In the selection of food it should be borne in mind that only a dietary well balanced in proteins, fats, carbohydrates, minerals, and vitamins can satisfy all the demands of the body. Thus the tissues under such conditions may be prepared to elaborate a milk that is adequate in quantity and in which variation from the optimal in chemical and biological properties is at a minimum.

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THE IMPORTANCE OF DIET IN THE TREATMENT OF CARDIAC FAILURE[1]

FRED M. SMITH, M.D., AND NELDA G. ROSS, M.S.

The normal function of the heart is dependent upon an adequate supply of energy provided by food. This energy requirement would seem to be even more necessary during the stress of cardiac failure. During a prolonged attack of cardiac failure, however, there is not infrequently a loss of 20 to 30, or even 35 pounds in weight. This would indicate that the individual either does not receive sufficient food or is not able to utilize it because of the disturbed function of the gastro-intestinal tract. It is our belief that the heart, under these conditions, is not adequately provided with energy, and a serious additional handicap may be imposed on it. On the basis of this conception, the diet in the treatment of cardiac failure should at least furnish sufficient energy to maintain a normal metabolism, and furthermore, be given in a form that is easily assimilated.

We (1) have recently described a diet which has proven very effective in treatment of cardiac failure and which seems to meet most of the dietetic requirements of the condition. This diet, in the beginning of the treatment, has an energy value of approximately 2100 calories and consists of 44 grams of protein, 110 grams of fat and 222 grams of carbohydrate. It is served in the form of milk, cream, butter, eggs, vegetable purées, cooked cereal and fruit juice. The carbohydrate is further increased by the addition of sugars as dextrin-maltose, dextrose and lactose. Small and frequent feedings are given to avoid gastric retention and fermentation. When edema is present the liquid intake is limited to 1500 cc. and the salt is reduced to the minimum. Usually, on the third or fourth day other foods, as jelly, crackers (salt free), toast, and stick candy are added. Later, about the eighth day, depending on the condition of the patient, puréed fruits and additional puréed vegetables are incorporated in the diet. Gradually the consistency of the food is changed from that of the soft to the light diet. In some, following the

[1] Read before the American Dietetic Association, St. Louis, Mo., October 19, 1927. From the Departments of Internal Medicine and Dietetics, State University of Iowa, College of Medicine.

elimination of the excess fluids, particularly in those who are greatly undernourished, the energy value of the diet is increased to approximately 3000 calories. When the patient is obese, however, the diet is sufficiently reduced to permit a gradual loss of weight. In all instances the diet is varied as far as possible to meet the taste and needs of the individual.

It is to be noted that the diet contains the basic protein requirement and even in the beginning of the treatment provides sufficient energy to maintain the weight of the average individual. Later the energy value is considerably increased. The food is given in a form that can be easily utilized and given at frequent intervals in order that the work of the digestive system may be reduced to the minimum. The carbohydrates are stressed not only because of the ease with which they are utilized, but because of their importance as a source of energy to the heart and body in general. Experience has furthermore taught us that the carbohydrates, particularly in the form of sugar, promote elimination which is especially desirable where there is extensive edema.

The diet is taken by most patients without discomfort. Seldom is there excessive gas formation, and rarely diarrhea. The fruit and vegetable content is sufficient to produce usually one or two bowel movements daily. It is seldom necessary to administer laxatives after the first day. Some patients, particularly those who have been heavy eaters, have complained of being hungry. It is possible that this objectional feature may be overcome by slightly increasing the bulk of the diet of those individuals who are accustomed to having a sensation of fullness in the epigastrium after meals.

The above diet has been employed in the treatment of more than seventy-five patients with cardiac failure.

In a number of instances a particular study was made of this feature of the treatment. During this investigation all the patients, with slight individual exceptions, were treated in the same manner. They were put to bed at absolute rest. Morphine or codein was administered when necessary to promote rest and sleep. Cascara or other mild laxatives were employed when needed to produce daily bowel movement. The tincture of digitalis, 15 to 20 minims, was prescribed three or four times a day, depending on whether or not the patient had previously been taking the drug. The routine hospital soft diet was prescribed. The liquid intake was limited to 1500 cc. and the urinary output recorded. The patient was weighed daily when the condition permitted. If after a period of five to seven days there was no demonstrable change in the original condition, and the weight remained stationary, the cardiac diet was prescribed.

In a number of patients the weight remained stationary or even increased during the control period. These were instances of advanced cardiac failure with extensive edema or even general anasarca. Following the change to the cardiac diet there was not infrequently an increase in the urinary output and a steady decline in weight. A reduction of 2, 3 or 4 pounds a day was not uncommon. The most striking effects of the diet was perhaps observed on a patient with advanced cardiac failure who had been in the hospital for weeks without any apparent improvement. During this period magnesium sulphate, the various diuretics, and the Karell diet did not alter the clinical course. The patient became so uncomfortable that morphine was prescribed during the day in addition to that at night. Finally an abdominal paracentesis was done. The fluid, however, rapidly returned. At this time the cardiac diet was prescribed. Thereafter there was a gradual loss of weight, the abdomen decreased in size and the general condition improved. The morphine was soon discontinued. In three weeks there was a reduction of 18 pounds in the weight and the fluid had practically disappeared from the peritoneal cavity. The weight was still further reduced 8 pounds; the edema had entirely disappeared from the extremities and there was no demonstrable fluid in the abdominal cavity.

Other instances might be mentioned in which the change in the diet was followed by the elimination of the excess fluids and the disappearance of other clinical manifestations of cardiac failure.

The low salt content, the energy value and the form in which the food is served, are believed to be responsible for the effectiveness of the diet. The loss of weight which invariably results from a prolonged period of cardiac failure in itself justifies an increase in the energy intake in the beginning of the treatment of a patient of this type. Except for the occasional obese individual, the loss in weight may be sufficient to further increase the weakness of the heart. Even in the obese it is generally recognized that the reduction in weight should be carefully regulated, otherwise the heart may be seriously damaged. We have at present a patient who, when admitted to the hospital, weighed 281 pounds. He did not begin to show a satisfactory improvement until the energy value of his diet was increased to about 3000 calories. The edema has practically disappeared and he now weighs 218 pounds. His present weight is about 25 pounds below that prior to the onset of the illness. Even though he is still about 40 pounds overweight we feel that his clinical course has indicated that a further reduction now might seriously impair the function of the heart.

The diet during the convalescent period from cardiac failure should vary with the individual needs of the patient. It is possible that care should be exercised for some time concerning the form in which the diet is served in order that the heart and the digestive system may still be spared. In those considerably underweight, the heart can hardly be

TABLE 1

Cardiac diet, weighed and approximated

MEALS				LUNCHES		
Breakfast				*9 a.m.*		
		gm.			gm.	
Milk		100	½ cup	Water	100	½ cup
Cream		66	¼ cup	or crushed ice	100	1 cup
Cereal (cooked)		120	½ cup			
Sucrose		10	3 teaspoons	*10 a.m.*		
Glucose		10	6 teaspoons	Orange juice	150	¾ cup
Dextrin-maltose		10	0	Lemon juice	15	1 teaspoon
				Sucrose	10	3 teaspoons
Dinner						
Soup	Cream	132	½ cup	Glucose	20	6 teaspoons
	Potato	50	¼ cup			
	Butter	10	2 teaspoons	*3 p.m.*		
Ice cream		100	½ cup	Milk	100	½ cup
or junket*			½ cup	Cream	66	¼ cup
Milk		100	½ cup	Flavoring		
Water		100	½ cup	Dextrine-maltose	12	4 teaspoons
or crushed ice		100	1 cup	Sucrose	5	1 teaspoon
Supper				*4 p.m.*		
Soup	Cream	66	¼ cup	Water	100	½ cup
	Milk	100	½ cup	or crushed ice	100	1 cup
	Spinach†	50	½ cup			
Butter		10	2 teaspoons	*7 p.m.*		
Custard	Egg	50	1 egg	Milk	150	¾ cup
	Milk	100	½ cup	Dextrin-maltose	10	3 teaspoons
	Lactose	10	3 teaspoons	or candy		1 stick
	Glucose	10	3 teaspoons			

Stick candy may be substituted anywhere in the diet for the equivalent amount of sugar.

* Milk, 100; cream, 66; sucrose, 5; dextrin-maltose, 10, and a half junket tablet. When junket is served, the milk at 7 p.m. is reduced to 100.

† Puréed spinach. Other vegetables may be substituted.

expected to regain its maximum functional capacity until the nutritional state is improved. We have a patient under observation, recovering from a prolonged period of cardiac failure, who weighs 89 pounds. Her average weight prior to the onset of the present illness was 130 pounds.

TABLE 2

The patient who requires no special variations in his diet may receive the following meals about the eighth day.

	gm.	
Breakfast		
Orange	100	1 small
Cooked cereal	120	½ cup
Sucrose	10	3 teaspoons
Glucose	30	9 teaspoons
Toast	30	1 small slice
Jelly	25	2 tablespoons
Milk	100	½ cup
Cream	66	¼ cup
Butter	10	2 teaspoons
Kaffee hag	100	½ cup
Dinner		
Soup — Cream	132	½ cup
Soup — Potato	50	¼ cup
Soup — Butter	10	2 teaspoons
Crackers	10	2
Apple sauce	75	¼ cup
Glucose	10	3 teaspoons
Toast	30	1 small slice
Butter	15	3 teaspoons
Ice cream	100	½ cup
Milk	100	½ cup
Water	100	½ cup
or crushed ice		1 cup
Supper		
Soup — Cream	66	¼ cup
Soup — Milk	100	½ cup
Soup — Spinach	50	¼ cup
Soup — Butter	10	2 teaspoons
Crackers	10	2
Poached egg	50	1
Toast	15	½ small slice
Butter	10	2 teaspoons
Jelly	25	2 tablespoons
Milk	100	½ cup
Stick candy	20	2

The lunches will be given as listed in table 1.

The food value of this diet is protein 55 grams, carbohydrate 378 grams, fat 142 grams, energy value approximately 3000 calories.

In addition, she has a fairly high grade secondary anemia. Obviously the function of her heart is greatly influenced by her general condition and can not be satisfactorily restored until her weight is increased and the anemia corrected. The diet has therefore been gradually increased and now has an energy value of approximately 3500 calories.

The calculated composition of the weighed diet is protein 44 grams, carbohydrate 220 grams, fat 109 grams. The energy value of the diet is approximately 2100 calories. Additions to the basal diet are made about the third day beginning with crackers, toast, jelly, butter, and fruit. Vegetables are added later. The fruits and vegetables are sieved when first included in the dietary régime. As the patient becomes hungry and is able to take increased bulk without distress, the fruits and vegetables are given unsieved. Variations and substitutions are made to suit the taste and condition of the patient. No salt is added in the preparation of the food. The diets may thus vary in consistency, energy value, or actual foods included.

When there is a dislike for milk it may be reduced and the protein replaced by an additional egg. An occasional patient objects to sweetened beverages. Under these circumstances jelly or stick candy may be substituted for the sugar for a few days. While an effort is made to induce the patient to take sugar as the chief form of carbohydrate and milk as the main source of protein, rarely do any two individuals take exactly the same diet.

REFERENCE

(1) Smith, F. M., Gibson, R. B., and Ross, Nelda G.: The diet in the treatment of cardiac failure. Jour. Amer. Med. Assoc., 1927, lxxxviii, 1943.

THE DIETETIC FACTOR IN POST-OPERATIVE TREATMENT[1]

LLEWELLYN SALE, M.D.

President of Staff, Jewish Hospital, St. Louis, Missouri

Crummer says that medicine was first practiced by priests and that there is still a large mystic element in our therapeutics. He is not sure when a doctor prescribes a diet today, whether he is outlining a form of treatment or imposing a penance.

In all of our therapeutic efforts, including diet, we must be sure of our indications. We must make use of and base our plan on the accepted scientific facts of recent date, modified by experience and individual needs. In our attempt to be ultrascientific we must remember that our patient is something more than a chemical laboratory, His tastes and dislikes must, to some extent, be taken into consideration. There is a tendency in our day toward efficiency that is not an unmixed blessing. We have routine diet lists, each in its proper pigeonhole, and when we have made a diagnosis we prescribe diet number so and so. This method is time saving and spares us the trouble of studying our patients and their habits, but does not always work out to the advantage of the patient.

In a discussion of dietetic therapy in post-operative conditions, I shall limit myself to some of the major operations and those which are done under general anesthesia. In this field there is much that is routine, and justly so, but there is also need for individual study. Think what a difference it makes whether your patient has been in good health just previous to an operation for some surgical emergency, or whether his condition is a chronic one, in which operation is undertaken as a last resort, or to correct some vicious result of a pathological condition. Think how much difference it makes whether your patient is a healthy individual or a moderately severe diabetic. The result of much thought and study in post-operative treatment has put us in a position to use routine measures in many cases and to individualize in special cases.

Someone has said that after operation a patient needs rest, water and food, and that the longer these are deferred, the worse it is for the patient. The two former are regularly provided for the patient. Our surgeons use

[1] Presented before the American Dietetic Association, St. Louis, October 18, 1927.

morphine in liberal and frequent doses to see that the patient is at rest. Proctoclysis or hypodermoclysis is begun as soon as the patient is returned to bed. Often, no such provision is made for furnishing food. It is not unusual to find that patients are starved, or nearly so, for some days after operation. As a result of the operation nausea and vomiting are often present and it has seemed to be the proper thing in the face of these symptoms to withhold all food. This starvation may contribute to the development of an acidosis to which these patients are prone. The patient may already be in a depleted condition and, therefore, urgently in need of food. Unexpected complications may arise which may prolong convalesence and if so, two or three starvation days will be all the more undesirable. In the dietetic management of these patients the use of the stomach tube is important and often overlooked. It is less trying to a patient to have his stomach washed than it is to have large amounts of water given under the skin or even intravenously. Some surgeons make it a practice to have the stomach washed while the patient is still on the table under the influence of the anesthetic. A liter of water may be left in the stomach and much of it will probably be on its way before nausea and vomiting set in. Very soon water, weak tea, or coffee, or cracked ice may be given in small quantities.

The condition known as acidosis is one on which much work has been done in the past decade. There is much known about it at the present time, but much still to be learned. Many tests have been devised to determine the presence of, and the degree of acidosis. Some of these are very complicated and their interpretation in clinical values is not always simple. The simplest clinical evidence of the presence of acidosis is the presence of acetone and diacetic acid in the patient's urine. Some of the substances in the blood that are useful in neutralizing acids are derived from the food that we eat, such as fruits and vegetables. Starvation causes acidosis, an unbalanced diet may result in acidosis, post-operative shock may bring on acidosis, and the administration of a general anesthetic may be responsible for the condition. In many patients, after operation, some or all of these causes are at work to produce an acidosis. Some patients by the very nature of their disease are partially starved when they come for operation; some have been on a diet which is conducive to the formation of an acidosis, they are then given a general anesthetic and may become the victims of surgical shock. These cases often cause much anxiety to the physician who has charge of them.

If I may be pardoned for what sounds like a bull, I would say that the best post-operative diet is pre-operative treatment. If there is time, the

patient should be on a diet in which fats have been reduced to a minimum, and in which there is a liberal allowance of carbohydrates. Some authors advise the use of a glucose solution several times a day for several days before operation. If the patient is a diabetic and his carbohydrate allowance is increased, it will be necessary to give him insulin, or to increase the amount he is already taking in order to provide for the utilization of the added carbohydrate and to keep his blood sugar at a safe level.

If a patient develops post-operative acidosis, free elimination must be provided. Water by mouth, it if can be given, should be used. Proctoclysis, hypodermoclysis, and intravenous saline, are methods of providing water to patients who cannot take it orally. We are in the habit of giving glucose intravenously in a situation of this sort, and giving enough insulin to take care of the sugar thus administered. One unit of insulin is usually considered necessary to metabolize 2 grams of carbohydrate. For practical purposes this formula may be used even though we know it is not scientifically accurate. Urinalyses must be done frequently to determine the presence of glycosuria and ketonuria, and occasional blood sugar determinations should be made. As soon as possible the patient should be put on his usual pre-operative diet.

There has arisen, in recent years, a very general objection to the use of milk in the early post-operative days. Some surgeons have a standing rule that their patients may have no milk because they have found that it causes distention. The burden of the milk digestion falls largely on the stomach and milk is retained in it for some time. Casein curds form in the stomach, and when the milk gets into the duodenum the pylorus closes and the curds leave the stomach slowly and with difficulty. Professor Jarotzky of Moscow has urged that egg white be used for feeding these patients, claiming that it has none of the undesirable qualities possessed by milk. In order to increase the caloric value of his post-operative diet he gives with egg albumen, unsalted butter. They must be given, according to his scheme, at different times, never together, if they are to leave the stomach quickly and not stimulate secretion. He bases these practical suggestions on theoretical considerations derived from the work of Pavlow and his school.

Vaughan and Van Dyke of Richmond, Virginia, on the other hand, make a strong case against the use of raw egg white. They quote extensively the work of W. G. Bateman. Jarotzky urges, in favor of this food, the fact that it calls forth no flow of gastric juice. They use this belief, which they acknowledge, as an argument against its use. They

claim further that raw egg white has an antitryptic action, that it evokes no flow of bile, that it is poorly digested in the intestines, that it prevents digestion and absorption of other protein given with it, and that it often causes diarrhea. According to these investigators all the disadvantages are eliminated if the albumen is coagulated by heat, and they recommend cooked white of egg highly. Their argument has much of plausibility, and even though I have not by personal experience confirmed their observations, I am inclined to accept their conclusions and to use egg albumen in a coagulated state.

The diet of the post-operative patient may not be preponderatingly composed of protein and fat. Carbohydrate must be used to furnish energy, to spare protein and because of its anti-ketogenic power. Milk sugar, cane sugar, gruels and malted milk are useful for this purpose. It must be remembered, however, that large amounts of carbohydrate given by mouth often increase abdominal distention. This is a condition which contributes much to a patient's discomfort and disturbs the surgeon's peace of mind. Glucose, intravenously, has earned a place in the dietary management of the post-operative patient. One or more well timed injections may do much to tide a patient over a stormy period.

Two baneful practices of former days have fortunately been given up—starving a patient preparatory to operation, and the administration of the pre-operative cathartic. Patients are now fed during the day preceding an operation, and no up-to-date surgeons routinely order a cathartic—some routinely forbid it. There is no objection, in most cases, to an enema if it seems indicated. The custom of catharsis before an operation illustrates how easily we become slaves to habit. For years this practice was followed on the unwarranted assumption that it would clean out the intestinal tract. Patients who were brought into the operating room for emergency operations, perhaps on some portion of the digestive tract, with whom there was no time for preliminary catharsis, were found to get along as well, nay, even better than those who had been purged. Finally, some daring surgeons had the courage to omit the ominous dose of castor oil. In the same way the post-operative third-day dose of oil, with its discomfort to the patient, is no longer given as a routine measure and the patient is the gainer.

It is needless for me to say that I have not attempted to cover this subject in so short a paper. The literature on post-operative treatment is extensive, if not voluminous, and will grow as knowledge grows. I have discussed only a few of the points that I am much interested in.

Your group is the link between the research scientist and the clinician.

Mendel has said: "Unfortunately, rational dietetics founded upon the newer knowledge of the chemistry of foods and nutrition has not yet received the discriminating study and advocacy on the part of practical clinicians that its importance unquestionably warrants." Your association of dietitians attempts to make practical application of scientific knowledge. You take into consideration the chemistry of foods and nutrition, the patient as an individual, and disease in its protean aspects. You are the hand maidens of the scientist and the practicing physician in their attempt to serve mankind.

THE EDUCATION OF THE AMBULATORY DIABETIC[1]

W. H. OLMSTED, M.D. St Louis

It is hardly necessary to emphasize to your Association the necessity of teaching the diabetic patient the quantitative measurement of his food. Although we realize that it is the quantitative measurement that we must teach to the diabetic, we are often at a loss as to how to go about teaching him to understand the methods of measurement. Dietary calculations are not difficult for the educated individual to learn, but to teach dietary arithmetic to some of our patients requires days and weeks of patient effort. Even then when they return to us after a few weeks at home, we often find our efforts have made only too little impression. After patiently teaching some elderly diabetic just how much of, say, the 5 and 10 per cent vegetables, he should eat each day, we have all had the experience of having him return eating as much as he desires of these particular foods. His excuse invariably is "You said, Doctor, I could eat the foods in that list." To him we had succeeded in teaching quality but not quantity.

In considering diabetic individuals as a group, there are two very obvious facts that seem to me to have a bearing on the problem of his dietary education. The first of these is that a woman is always the family dietitian. This is true whether the diabetic be a man, woman or child. The average mother is not in daily contact with problems of percentage. If you tell her that orange juice contains 12 per cent of sugar, and ask her how much there would be in a glassful, the problem presented is one quite foreign to her usual lines of thought. But if you should tell her that a glassful of orange juice contains six teaspoons of sugar, she gets a definite and real visualization of the quantity of sugar there. A teaspoon and a glass are objects of measurement with which she is in constant and daily touch. Why not take advantage of these quantitative measuring implements with which she is familiar?

The other fact is the age of the average diabetic patient. As a group they are past forty. Fractions, percentages and the metric system have

[1] Presented before the American Dietetic Association, St. Louis, Missouri, October 19, 1927.

long been forgotten. Not only that, but the flexibility of the mind of the school child has been largely lost. Older people do not learn to use the metric system as easily as they did in the 'teens. Then, too, they lack the young individual's enthusiasm to learn. We must adapt our methods to their age and mental inflexibility.

Just how much education should an individual possess to calculate his diet in grams of protein, fat and carbohydrate? In the St. Louis public schools a child is taught simple fractions in the fourth grade. He is taught what per cent means, and interest rates, in the sixth grade. To understand dietetic arithmetic, a diabetic must have the equivalent of the sixth grade public school education. If he does not have this degree of education, we are presented with the necessity of finding someone in the family who does have the required education and who can calculate diets for the patient. Or, if that is not possible, then we must turn ourselves into school teachers. Often we call upon a younger member of the diabetic's family for help. Perhaps a bright school child can be made to understand and calculate diets much more readily than the diabetic parent. We have found these youngsters in diabetic families of great assistance, and often of invaluable aid. However, to put into the hands of the younger member of a family the power of dictating what the older one shall eat, is to reverse the usual order of family authority. As long as the patient is in the hospital, this plan of the youngster calculating and measuring the older diabetic's diet works nicely, but when the patient goes home, parental authority resents the dictation of the youngster as to what and how much food shall be eaten. I am impressed more and more with the necessity of educating the diabetic, himself, regardless of his mental equipment or lack of education. Don't try to adapt the patient to your method of education, but adapt your method to the mentality of the patient.

For the past three years we have been grouping our diabetic patients into one of three groups. Each group has been educated by a system adapted to the mental equipment of the group. The grouping is a rough one, but we feel that some classification on the basis of the diabetic's ability to receive dietetic education is strongly conducive of improved results.

The first group are those ignorant patients whom we meet usually in our diabetic dispensaries; some of them cannot read or write. They do not have the ability to even add simple fractions. What can we do for these people? How can we teach them to measure their food? The only answer to this problem that I know of is the demonstra-

tion in the kitchen over and over again of the amount of food to be eaten. The patient is taken into the hospital kitchen and shown how much of each food is prepared for his individual meals. Constantly the dietitian emphasizes that it is the *quantity* of the food that is of importance, not the fact that it belongs to a class or group of foods. In other words, he must be taught to measure, by eye or with measuring cup, the proper amount of food he is to eat. In this group great attention must be paid to his financial status. All of us have taught this class of diabetics to use cream in their diet; if we but took the time to investigate, we would find they do not have the money to buy cream. This group must be kept in the hospital for some time, and are often very slow to learn. To be successful the dietitian must follow them to the dispensary as they return for observation. In the dispensary we must have dietetic kitchens where the work of measuring food and demonstrating its preparation can be carried on. How many of our dispensaries are so equipped? One only has to see the work in dispensaries where good facilities are at hand, to appreciate how impossible it is to get results without proper equipment. The key of success is educating this group is constant demonstration in the hospital, and for months and years after in the dispensary kitchen.

The second group are those who have the equivalent of a fourth grade public school education. They can add simple fractions such as fourths, halves and thirds. They can use the standardized measuring cup marked as it is, one-fourth, one-half, three-fourths, one-third and two-thirds. They have difficulty in understanding the metric system. They do not understand percentage. If you take them to the hospital kitchen and patiently teach them what per cent means and how to weigh their food in grams, they may be able to calculate and weigh their diet while under observation. But when they go home, the calculations and weighing in grams are so foreign to anything they have known, that the management of their diet seems too great a burden to carry on. Another difficulty with this group is that they have their own family physician; they do not return to the dispensary, and the family doctor, as you realize so well, does sometimes know less of dietary management than the patient, himself. For three years we have been educating this group by a system we call the cup-teaspoon method. I shall explain the method later. This type of patient has a mild form of the disease and is, therefore, ambulatory. They will not enter the hospital, and if one can educate them in the physician's office while they are carrying on the measurement of their diet in their own homes, and can show them that they can measure

their food at home well enough to become sugar-free and keep so, they get confidence in their own ability.

The third group is composed of those with enough intelligence to use the metric system and calculate their diets from the tables of food values available in any dietetic manual. If the patient has the brains to learn to calculate his diet, but *not the will*, I should attempt the simpler method of education. I wonder if any of you have had the experience of trying to educate some well-to-do diabetic, and failing utterly to get his full coöperation? He may feel that the job of preparing his food is one for his cook to worry about. In that situation it seems to me the dietitian has to classify the mental equipment of the cook rather than the patient.

The type of patient who must always be placed in the third group is the severe diabetic. The severity of his disease, and the larger doses of insulin he requires, necessitates a very fine adjustment of diet. This can only be accomplished by the weighing of his diet in grams. If there be any possibility of teaching him the calculation of his diet in grams of protein, fat, and carbohydrate, it must be undertaken. When, after weeks of effort to teach the exact method of calculating and weighing his diet, you find that he cannot grasp it, I feel it justifiable to teach a simpler method.

I shall not take up in detail the technique of the education of Group One and Three, but I should like to elaborate the method we have found so useful in Group Two, the cup-teaspoon method. Let me emphasize again that this scheme of education is especially devised for ambulatory patients.

The patient is given a small book composed of five lessons. The lessons are gotten up in school textbook style and after each lesson there is a series of questions for him to answer. The titles of these lessons are (1) The Purpose of the Diet, (2) The Sugar-containing Foods, (3) How to Measure the Sugar in the Diet, (4) How to Measure the Albuminous Foods, (5) How to Measure the Fat Foods. The tables of the sugar-containing foods are arranged so that specified amounts of food contain one, two, three and four teaspoons of sugar.

After each food is listed a certain fraction of a cupful. The cup referred to is the standard $\frac{1}{2}$ pint measuring cup. At the expense of some accuracy, only the markings that are present on this cup are used, namely: $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$, $\frac{1}{3}$, and $\frac{2}{3}$. By consulting these tables the patient may find at a glance the number of teaspoons of sugar there are in a certain proportion of a cupful of any of the carbohydrate foods. If he can add these very simple fractions, he can take as much as he wishes of any food and know the sugar value of that amount stated in teaspoons.

TABLE 1

THE SUGAR VALUE OF FOODS STATED IN HOUSEHOLD MEASUREMENTS

GROUP ONE

Each amount of food given below equals one teaspoon of sugar

Asparagus	½ cup	Kohlrabi	½ cup
Beans, green (canned)	½ cup	Lettuce, loose	2 cups
Cabbage, raw	2½ cups	Lettuce, compact in head	½ head
Cabbage, cooked	⅔ cup	Mushrooms	½ cup
Cauliflower, cooked	1 cup	Okra, cooked	⅔ cup
Celery, raw	1½ cups	Pickles, sour	¾ cup
Celery, cooked	⅔ cup	Pumpkin, cooked	½ cup
Cucumber, sliced	¾ cup	Rhubarb, cooked	½ cup
Egg Plant, cooked	½ cup	Sauer Kraut, cooked	⅔ cup
Endive	2 cups	Spinach, cooked	½ cup
Greens, cooked	½ cup	Tomatoes, raw	¾ cup
(Beet, dandelion, mustard, turnip greens)		Tomatoes, cooked	½ cup
		Vegetable Marrow	½ cup

Bran Muffins, Recipe No. 2—2 Muffins
Cocoa, 2 level teaspoonfuls

GROUP TWO

Each amount of food given below equals two teaspoonfuls of sugar

Beets, cooked	½ cup	Blackberries	1 cup
Carrots, cooked	½ cup	Cranberries (cooked)	½ cup
Onions, cooked	½ cup	Grapefruit	½ cup
Parsnips, cooked	½ cup	Loganberries	1 cup
Rutabagas, cooked	⅔ cup	Strawberries	1 cup
Squash, cooked	½ cup	Watermelon	½ cup
Turnips, cooked	¾ cup		

Crackers, Graham, 1 Cracker

GROUP THREE

Each amount of food given below equals three teaspoons of sugar

Apple, raw	½ medium	Milk, fresh	1 cup
Apple Sauce	½ cup	Milk, canned	6 tablespoons
Apricots	⅔ cup	Corn Flakes	½ cup
Cantaloupe	½ medium	Crackers, Soda	2 crackers
Cranberries	½ cup	Cream of Wheat—	
Currants, fresh	¾ cup	Dry	2 level tablespoons
Gooseberries	¾ cup	Cooked	½ cup
Lemon Juice	½ cup	Oatmeal, dry	¼ cup
Oranges	½ medium	Oatmeal, cooked	½ cup
Orange Juice	½ cup	Puffed Rice	¾ cup
Pear, fresh	½ medium	Puffed Wheat	1 cup
Peach, fresh	½ medium	Rice, dry	1½ tablespoons
Buttermilk, fresh	1 cup	Rice, cooked	½ cup
Cream, fresh	½ pint		

TABLE 1—*Continued*

GROUP FOUR

Each amount of food given below equals four teaspoons of sugar

Beans, Lima	½ cup	Cherries	¾ cup
Bread (any kind)—		Grapes	¾ cup
½ x 4 x 3½ inches	1 slice	Plums, fresh	1 cup
Peas	½ cup		

GROUP FIVE

Five teaspoons of sugar		Nine teaspoons of sugar	
Banana	½ cup	Apricots, dried	¼ cup
Bran	½ cup	Figs	½ cup
Corn, canned	½ cup	Peaches, dried	½ cup
Pears, canned, no sugar	½ cup	Pineapple, canned	½ cup
Potato	1 medium	Prunes, dried	¼ cup

TABLE 2

GROUP SIX

The albuminous foods

Lean meats and other foods which contain much more albumin than fat

Beef—Steaks	Lamb—Leg
Cheese, Cottage	Liver
Chicken, Spring	Mutton—Leg
Egg White	Sweetbreads
Fish	Veal
Kidney	

GROUP SEVEN

Albuminous foods which contain considerable fat

Beef Tongue	Poultry—Duck, Goose, Fat Chicken, Squab, Turkey
Cheese—except Cottage	
Chops—Lamb or Pork	Roasts—Beef or Pork
Egg Yolk	Sausage
Ham	

GROUP EIGHT

The fat foods

Bacon	Lard
Butter	Oils—Mazola, Olive or Wesson
Cream—Single or Double	

GROUP NINE

Nuts, which have much fat, but also much albumin and sugar

Almonds	Peanuts, (high in sugar)
Brazil Nuts (low in sugar)	Pecans, unpolished
Filberts	Walnuts, California
Hickory Nuts	Walnuts, California soft shell

The protein foods are arranged in two groups on the basis of their fat content.

One group is low in fat, the other, high in fat. The purpose of this division is to make possible the control of fat in meats. The fat foods are listed together to give the sources of fat that he can draw upon.

The units of measurement used are: for sugar, the teaspoon (4 grams); for fat, a square of butter; for protein food, a serving. We mean by a "square of butter" a slice $\frac{1}{2}$ inch thick, cut off from a $\frac{1}{4}$ pound package. We use butter as a standard for fat measurement because it is so universal in its use. The quarter-pound package is widely used in cities and a slice $\frac{1}{2}$ inch thick equals 10 grams. This size unit is practical for

TABLE 3

MENU

Calories 2400

Morning

Muffins, Two	Butter, 2 squares
Egg, One	Cream, $\frac{1}{4}$ cup
Bacon, 3 strips	Fruit, Equal to 3 teaspoons sugar

Noon

Muffins, Two	Butter, $2\frac{1}{2}$ squares
Consomme (clear), One cup	Vegetables, Fruit or other food, Equal to $5\frac{1}{2}$ teaspoons sugar
Meat, Group seven, One serving	
Cream, $\frac{1}{4}$ cup	

Night

Muffins, Two	Butter, $2\frac{1}{2}$ squares
Meat, Group six, One serving	Vegetables, Fruit or other food, Equal to $5\frac{1}{2}$ teaspoons
Cream, $\frac{3}{4}$ cups	

Always use measuring cup

fat measurement. The unit of protein is a serving, weighing a hundred grams. If the protein food can be measured in the cup, a serving equals $\frac{1}{2}$ cup. Meat which is served customarily as chops or slices is difficult to measure. The average pork chop weighs about 60 grams, so that two chops form a serving. Slices of meat we have described as thin, like cold sliced ham, as one-half inch thick, and one inch thick. We give the measurement in inches for each kind of slice that goes to make a serving. The quantitative measurement of meats by rough measurement is not so satisfactory as in the case of carbohydrate and fat foods.

After teaching these units of measurements, the next step is constructing a menu that will be applicable throughout the year and whether the patient is at home or away.

The most important point in constructing the diabetic's menu is to show him what he can and must eat, rather than what he cannot eat. The diabetic must live, to a great degree even with the use of insulin, on fat. So we give him what we call a fat-protein skeleton of each meal. This consists of the amount of meat, cream and butter he must eat to get the proper calories. He may change his butter into cream, for a square of butter equals ¼ cup of cream, or mayonnaise may be substituted for butter, since ⅔ tablespoon of mayonnaise equals a square of butter.

TABLE 4

ONE SQUARE OF BUTTER EQUALS—
- ¼ cup of cream;
- 2 tablespoons of double cream;
- ⅔ tablespoons of mayonnaise;
- 1 strip of bacon;
- 2 muffins;
- 2 teaspoons of oil.

TWO SQUARES OF BUTTER EQUAL—
- ½ cup of cream;
- ¼ cup of double cream;
- 1⅓ tablespoon of mayonnaise;
- 2 strips of bacon;
- 1 tablespoon of oil;
- 4 muffins.

THREE SQUARES OF BUTTER EQUAL—
- ¾ cup of cream;
- ½ cup of double cream;
- 2 tablespoons of olive oil;
- 3 strips of bacon;
- 6 muffins;
- 6 teaspoons of oil.

FOUR SQUARES OF BUTTER EQUAL—
- 1 cup of cream;
- ½ cup of double cream;
- 3 tablespoons of mayonnaise;
- 3½ strips of bacon;
- 2 tablespoons of oil.

The carbohydrate foods are not listed in the usual way as so much of 5 or 10 per cent vegetables and so much of seven and twelve per cent fruits. Instead the number of teaspoons of sugar allowed at each meal is stated and the patient selects his foods in such quantity that their sugar value will amount to the number of teaspoons of sugar allowed. He goes to his cupboard or ice-box or pantry with so many teaspoons of sugar to "spend" and he "spends" that much sugar in form of the vegetables and fruits he has at hand. The psychology of the method is that

he thinks in terms of the total sugar value of a meal. This is what we want him to be able to do and is the chief aim of our education. If one lists for him, in the usual way, so much of five per cent vegetables, so much of ten per cent, so much fruit, he thinks of these foods as those "allowed." His food, in his mind, consists of those found in certain groups. He misses, often completely, what is the essential thing for him to learn, namely, the sugar value of the meal.

This method of making the diabetic select his food for its sugar value has another advantage of prime importance. At no time, whether he is at home or away, whether he can obtain vegetables or not, is he at a loss in making up the right number of teaspoons of sugar. He can always "spend" his teaspoons of sugar for crackers or cereals or fruit if the all desirable vegetables are not to be had. He can vary his diet according to season and environment, keeping it always within his sugar limitation.

This simple cup-teaspoon method has been so successful in getting the patient to think in simple terms of the sugar value of each meal, that I have applied the same idea in teaching a patient to weigh his food in grams. We teach him a fat-protein skeleton diet, and then give him so many grams of carbohydrate to spend in the form of carbohydrate foods. He thinks in terms of a specified number of grams of sugar that he is to eat each meal. Then he converts that amount of sugar into those foods that are almost wholly carbohydrate in character.

To my mind, success in diet therapy with diabetics depends on how the patient thinks with regard to his diet. He should think *first* in terms of its sugar value, and then how that amount of sugar can be consumed in his food.

CURRENT LIST OF HOSPITALS GIVING THE APPROVED COURSE FOR STUDENT DIETITIANS

In October, 1927, an outline of a standard course for student dietitians in hospitals was approved by the American Dietetic Association. A list of hospitals offering training to student dietitians which met all the requirements of this approved course was published in the March JOURNAL.

Since then the number of hospitals following the approved course has been steadily increasing. The list published below includes the names of all the hospitals now known to the Committee to meet all the requirements of the approved course for student dietitians.

The information about each hospital was obtained through a questionnaire filled out by the chief dietitian of the hospital. As yet no scheme of hospital inspection has been worked out. It is hoped that next year some such plan may be found possible. At present the only material by which the Committee may judge the course in any hospital are the statements made by the dietitian on the questionnaire. From this it is a simple matter to determine whether or not the course includes all the essentials of the approved course. In a way the questionnaire is a contract with the dietitian. But what happens when the dietitian leaves and a new dietitian comes to take her place? Perhaps the work continues; perhaps it is improved, but an instance has come to the attention of the Committee where this is not true. The new dietitian was not given the same standing in the hospital; it was no longer possible for the students to receive proper administrative experience. In this particular case the new dietitian asked the Committee to take the name of the hospital from the approved list. But because of the possibility of similar instances, the Committee feels that each new chief dietitian should be required to fill out and send in a new questionnaire. This would be her statement of the outline she planned to follow in training student dietitians, and from it the Committee could determine whether or not to list the hospital as one at which the approved course is offered to student dietitians. When a chief dietitian leaves, the hospital would be automatically dropped from the list until the new dietitian communicated with the Committee.

This would mean that the list of approved hospitals would constantly

be changing and should be published in the JOURNAL at least once a year. Complete information in regard to the requirements of the approved course, together with a questionnaire for the dietitian to fill out and a list of hospitals offering the approved course, could be obtained at any time by writing to the business office of the American Dietetic Association.

It would not have been possible to include many of the new names on the list published below if the members of the Committee had not worked with the greatest coöperation and done all in their power to eliminate any extra delays. Those who have worked on the Committee this year are Thelma Tubbs, Peter Bent Brigham Hospital, Boston, Massachusetts; Rosina Vance, Massachusetts General Hospital, Boston, Massachusetts; and Eugenia Martin, Barnes Hospital, St. Louis, Missouri.

Hospital	*City*	*Dietitian*
British Columbia:		
Vancouver General Hospital	Vancouver	Ethel C. Pipes
California:		
California Lutheran	Los Angeles	Reeva Hinyan
Hospital of Good Samaritan	Los Angeles	Hester Wilman
Methodist Hospital of Southern California	Los Angeles	Elizabeth Hayward
Fabiola Hospital	Oakland	Belle Haggerty
San Francisco Hospital	San Francisco	Helen Abbot Douglas
Stanford University Medical School	San Francisco	Charlotte Sloan
Connecticut:		
Bridgeport General	Bridgeport	Leslie Hunter
Illinois:		
Cook County	Chicago	Millie Kalsem
Evanston	Evanston	Sarah E. Osborn
Michael Reese	Chicago	K. Mitchell Thoma
Presbyterian	Chicago	Elsbeth Hennecke
Indiana:		
Indiana University	Indianapolis	Lute Trout
Methodist	Indianapolis	Margaret Marlowe
City Hospital of Indianapolis	Indianapolis	Amy Colescott
Iowa:		
University of Iowa	Iowa City	Kate Daum
Iowa Methodist	Des Moines	Frances Rose
Maryland:		
Johns Hopkins	Baltimore	Phyllis Rowe
Massachusetts:		
Children's Hospital	Boston	Martha Stewart
Massachusetts General	Boston	Rosina Vance
Peter Bent Brigham	Boston	Thelma Tubbs
Michigant:		
University Hospital	Ann Arbor	Margaret Gillam

Minnesota:		
Ancker Hospital	St. Paul	Winifred Howard
Charles T. Miller	St. Paul	Eva Bregorson
Minneapolis General	Minneapolis	Lois Hurlbutt
University Hospital	Minneapolis	Gertrude Thomas
Missouri:		
Barnes Hospital	St. Louis	Eugenia Martin
Kansas City General	Kansas City	Merle Buckles
Research Hospital	Kansas City	M. Ethel Ollis
New York:		
Albany Hospital	Albany	Virginia Howard Ray
Clifton Springs Sanitarium	Clifton Springs	Helen Clarke
Lebanon Hospital	New York City	Betsy Helburn
Montefiore Hospital	New York City	Mary Northrop
Presbyterian	New York City	Martha Koehne
Rochester General	Rochester	Effie Winger
Strong Memorial	Rochester	Grace Carden.
North Carolina:		
Watts Hospital	West Durham	Mary Ellis
Ohio:		
Miami Valley Hospital	Dayton	L. Atta Balender
Mt. Sinai Hospital	Cleveland	Helen Mallory
Oklahoma:		
State University of Oklahoma	Oklahoma City	Edith Tilton
Pennsylvania:		
Homeopathic Hospital	Pittsburgh	Irene Wilson
Western Pennsylvania	Pittsburgh	Charlotte Addison
South Carolina:		
South Carolina Baptist	Columbia	Leila Maude Tace
Greenville City Hospital	Greenville	Grace E. Ames
Utah:		
Latter Day Saints Hospital	Salt Lake City	Katherine Baily
Washington, D. C.:		
Walter Reed General	Washington, D. C.	Grace Hunter
Washington:		
Interne Dietitian Training under auspices of the Washington Branch of the American Dietetic Association. Training arranged through affiliation at the following hospitals:		
Tacoma General Hospital	Tacoma	Flora McLaughlin
Children's Orthopedic	Seattle	Dorothy Goodrich
Seattle General	Seattle	Mabel G. Flanley

(Signed) KATHERINE MITCHELL THOMA,
Chairman, Section on Education, American Dietetic Association.

EDITORIALS

The 1928 Annual Convention

Washington, with all its attractions, is to be the Convention City for the Eleventh Annual Meeting of the American Dietetic Association, to be held October 29, 30 and 31, with head-quarters at the Hotel Willard.

Those who have never attended a convention of our Association cannot realize the inspiration and benefit derived by contact with leaders in the field of Nutrition and Dietetics and those in the Allied Professions. Members who have never visited Washington will doubly profit by attendance at the Convention; the beauty and unique charm of the Capito City will especially appeal to those interested in the historical background of our country. An interesting vacation may well be combined with professional profit.

Now is the time to arrange for your attendance at the Convention. Those who meet with us this fall will not fail to be inspired by new ideas and the formation of new contacts which will enable them to start another year with renewed enthusiasm. You will return to your work with an increased pride in your profession, a greater understanding of its far reaching worth and a better ability to cope with the practical problems which surround you in hospital work.

The plans, including trips in and about Washington, a day in Baltimore—the home of the Johns Hopkins Medical School and Hospital, and the famous research laboratory of Drs. McCollum and Simmonds—and the program in general are well under way and give promise of another outstanding convention such as the one which was held in the National Capitol six years ago. The Program Committee, with Dr. Martha Koehne as Chairman, insures a program of great professional interest. An early Convention Bulletin will soon reach you.

Florence E. Bateson,
Publicity Chairman.

A Permanent Non-Commercial Exhibit

There is a wealth of material developed by active workers in dietary departments of hospitals and clinics which has gone through the theory

stage and has evolved into practical usefulness. Mrs. Thoma, Chairman of the Section on Education, has appointed Sarah Elkin of the Michael Reese Dispensary, 1012 Maxwell Street, Chicago, Chairman of a Committee whose major work will be to assemble a permanent non-commercial exhibit. This will be used at the American Hospital Association meeting in San Francisco, as well as at our meeting in Washington.

Will all those who have not already done so, please send in new copies of all forms used in dietary departments. Material such as the following is desired: Copies of diets on file; sample menus; outline of Dietetic Courses for Student Nurses; methods of procedure in giving diet instructions to both hospital and ambulatory patients; any other material of interest to persons in the nutrition field.

After this material has been exhibited it will be kept in filing cabinets in the office of the Association at Chicago. A card catalogue of subject and institution will be provided as a guide. The exhibit will be available to all members. Arrangements may be made later whereby it may be loaned. All material chould be arranged in a manilla folder, size 9 by 12, and sent *immediately* to Miss Elkin.

Living to Eat versus Eating to Live

Food in America is more or less a means to an end—"we eat to live." The Continental man on the street, on the other hand, seems to be dominated by a single thought, his next meal. Not so much when he shall eat it, but where, what it shall consist of and who will be his companion. The only really serious part of the table conversation is at the beginning of the meal. The selection, combination and sequence of foods to be ordered is discussed with an intensity worthy of the connoisseur delicately reacting to the lights and shadows of an old master. Food is the serious business of life, and work must accommodate itself as best it may. In Italy one dines late and ceremoniously, between eight and nine, on endless spaghetti bathed in its mellow sauce, which has basked for hours under the affectionate eye of the cook; salads, possibly more than adhering to the old rule for a perfect salad, and other dishes in keeping with:

> "Salad, and eggs, and lighter fare,
> Tune the Italian spark's guitar;
> And, if I take Dan Congreve right,
> Pudding and beef make the Britons fight."

The British Empire has certain institutions with the solidity of the pyramids—the Bank and roast beef and Yorkshire pudding, for example;

breakfast and tea are included in this list of reliabilities. Other meals do not matter so much. Breakfast is bountiful and unhurried. Tea one must have—it is inevitable, scalding hot and strong, well fortified with bread and butter or what you will—if you are an American and know no better. Be it wartime or peacetime, between four and five o'clock the nation's clock has stopped. In Germany they do not dine or lunch, they browse; between the acts at the theatre, the opera and the concert, one must always eat. In France all meals are important *except* breakfast. But at the stroke of twelve food takes its proper place in the scheme of life. All France insists on a good lunch and time to digest it; other affairs can, and do, wait. From twelve to two is sacred to the eighth art. From hors d'ouvre, which may consist of green, poisonous looking Portuguese oysters, snails redolent of garlic or delicious steamed mussels, to dessert, it is all a matter of the utmost moment. The situation may grow so tense that it becomes necessary to take the head waiter and one or two of his assistants into one's confidence before the appropriate entree is selected, and explicit directions dispatched to the chef. To eat is the serious business of life.

BOOK REVIEWS

Basal Metabolism in Health and Disease. By Eugene F. DuBois, M.D. Price $5.00. Second Edition; Philadelphia; Lea & Febiger, 1927.

Dr. DuBois in the second edition of "Basal Metabolism in Health and Disease," as in its predecessor, has rendered a real service to the clinician, who is held responsible for a thorough knowledge of all diseases and has little opportunity to gratify his ambition to meet such requirements. The beauty of this volume lies largely in the fact that the subject matter is described so that a thorough knowledge of the existing state of affairs can be readily obtained. No attempt is made to gloss over gaps in the interpretation of basal metabolism results; it becomes perfectly apparent that there is much to learn in regard to thyroid disease, the other endocrine glands, etc. Dr. DuBois has furnished us a synopsis of the literature and has tinged this with his own valuable comments; this gives a combination that will be of inestimable service to any physician seeking advice in the handling of such patients as require a basal metabolic determination for the proper diagnosis of their case and a guide as to therapy.

The book virtually consists of two sections. "Metabolism in Health" is devoted to a study of physiological principles and standards and instruments used in basal metabolic estimations; this section of the book will be of interest and value to the laboratory workers in this field. The second half of the volume takes up the clinical application of basal metabolism in undernutrition, obesity, diabetes, thyroid disturbances, etc.; the clinician will find a fund of information here. There are so many facts encompassed in a comparatively few pages that the work will find its use more as a reference aid than as "light medical reading" to be perused and assimilated in an evening or two.

This whole subject is in a formative state that necessarily renders each patient more or less of an experiment in diagnosis and treatment. It is a great help to have this volume as an aid so that all angles of the situation may be duly considered and the diseased individual given the full advantage of the most recent observations and conclusions in regard to basal metabolism.

H. O. MOSENTHAL, M.D.

Dietetics for Nurses. By Fairfax Proudfit, Instructor and Clinical Dietitian, Memphis General Hospital, Memphis, Tennesee. Price $2.75. Fourth Edition, completely revised. Pp. 598. New York: The Macmillan Company, 1927.

The author aims in this book to give the nurse a practical and intelligent understanding of diet and dietary regulation, both in normal and abnormal conditions.

To present material clearly the first two sections of the book are given over to a discussion of food, its composition and classification; the fuel value of food, and methods of preparing and administering it. Section III covers the chemical composition of the body and the processes involved in the digestion, absorption and general metabolism of food. This chapter is ably handled. Section IV, on diet therapy, embodies a thorough discussion of various diseases and conditions more directly related to nutrition. The material is presented in detail, and a summary at the end of each chapter serves to impress upon the nurse the most vital points to be observed in each condition.

The book is filled with charts and tables of interest and value. The chart on the relation of food to the body on page 50 is especially helpful; the table on page 562, arranged by Constance Travis, gives a graphic outline of the utilization of food in the body. The appendix is given entirely to very complete tables of food analyses.

The material presented is not too technical

and always considers the viewpoint of the nurse; it should enable her to acquire an accurate knowledge of dietary control.

F. E. B.

Feeding the Child from Two to Six. By Mary Francis Hartley Barnes, A.B. With an Introduction by Richard M. Smith, M.D., Assistant Professor of Child Hygiene, Harvard University Medical School and School of Public Health. Price $2.50. New York: The Macmillan Company, 1928.

In her foreword the author states that this volume is planned to supplement the doctor's instructions to the mother and nurse. It will prove especially valuable to those who have had no opportunity to study dietetics. The carefully balanced menus and practical recipes should assist the busy dietitian as well. The author has wisely selected recognized authorities for her source material.

Part I covers the fundamental principles of infant feeding. Part II gives numerous menus, discusses how to teach the child what he should eat, economics of food, dietary methods of avoiding constipation, etc. Part III gives complete yet simple methods of preparing all foods suitable for children. The appendix gives caloric requirements, food tables, sources of vitamins and minerals, weight and height tables and concludes with a reliable list of publications for parents.

M. P. H.

The Normal Diet. By W. D. Sansum, M.S., M.D., F.A.C.P. Price $1.50. Second Edition; pp. 136. St. Louis: The C. V. Mosby Company, 1928.

The menus for ten normal diets are given in this volume; they contain approximately 850 grams of bulk, 300 grams of carbohydrate, 90 of protein and 100 of fat, totaling about 2400 calories. The following subjects are discussed: Bulk requirements; the length of time food remains in the intestine; the roughage or residue value of foods; constipation and the action of cathartics. For the prevention of constipation a diet containing about two pounds of bulk and consisting largely of fruits and vegetables is preferred to the usual bran and mineral oil.

Chapter 3 is devoted to a discussion of the acid-ash type of acidosis. Based on his experimental work with rabbits the author is led to believe that many symptoms, ranging from high blood pressure to acid stomach, are due to the ingestion of food containing an excess of acid residues. Urine should be nearly neutral and sodium bicarbonate should be taken if the individual thinks it benefits him. A list of the acid and alkali-ash values of different foods is given. In the preparation of bread the "acid wheat" flour is neutralized by mixing it with lima bean flour. The menus which follow contain alkali-yielding foods. "Women shoppers' headache" is ascribed to the acetone type of acidosis.

The author gives a series of menus for weight reduction; they average 124 grams of carbohydrate, 67 grams of protein and 24 grams of fat, with 1040 grams of bulk and yield about 1000 calories. The remaining pages are devoted to consideration of the protein, mineral, vitamin and water requirements of the body. The appendix contains a method for determining urine acidity and the familiar weight tables.

This book should serve a useful purpose. It would benefit by the omission of many statements not sufficiently substantiated by experience or general medical experience, e.g., the causal relation between hypertension and acid-ash foods. The author's case reports illustrating remarkable cures, such as the relief of asthma by pancreatin, are not entirely convincing.

LOUIS BAUMAN, M.D.

NEWS NOTES

The Thirteenth Annual Convention and the Second Annual Hospital Clinical Congress of the Catholic Hospital Association will be held at Cincinnati, June 18 to 22, inclusive. Section X, Kitchens and Dietetics, under the direction of Anna Boller, will be of particular interest to dietitians. Miss Boller has arranged a well-rounded program, covering subjects of particular present interest in the field of diet therapy in addition to a discussion of the dietary department's responsibility to the hospital, and the purchasing of supplies and equipment. Special outside visiting programs have been arranged. A complete model general kitchen and diet laboratories have been arranged.

American Home Economics Association. The twenty-first annual meeting of the Association will be held in Des Moines, Iowa, June 25 to 29. The first session will be devoted to a brief survey of the year's progress in the various lines of home economics. The address of the President, Miss Lita Bane of the University of Wisconsin, will be delivered Tuesday evening, June 25. On Wednesday evening, Judge Florence E. Allen of Columbus, Ohio, will speak on "Significant Factors in Home Life as Revealed through the Courts." Each of the ten sections of the Association will hold two or three special meetings at which its particular interests will be presented in papers and informal discussions.

American Public Health Association. The fifty-seventh annual meeting will be held October 15 to 19, at the Hotel Stevens, Chicago.

American Conference on Hospital Service. At the annual meeting of the delegates in Chicago, February 7th, the following constituent members of the Conference were represented: American Association of Hospital Social Workers; American Association of Industrial Physicians and Surgeons; American Dietetic Association; American Hospital Association; American Medical Association; American Nurses' Association; American Occupational Therapy Association; Bureau of Medicine of the United States Navy; Catholic Hospital Association of the United States and Canada; Medical Department of the United States Army; National League of Nursing Education; National Tuberculosis Association; United States Public Health Service; United States Veterans' Bureau.

American Hospital Association. The annual meeting will be held at the Clift Hotel, San Francisco, August 3 to 6.

The Michigan Hospital Association and the Southeastern Michigan Dietetic Association held a joint meeting at the Book-Cadillac Hotel, Detroit, April 19 and 20. Mary M. Harrington, Dietitian, Metabolism Department, University Hospital, Ann Arbor, arranged a very interesting program for the Dietetic Association. Some of the most impressive features for Thursday were as follows: "The Responsibility of the Hospital in the Training of Student Dietitians"—Lenna Cooper, Food Director, University of Michigan. "Pernicious Anemia"—Dr. Cyrus Sturgis, Director, Thomas Henry Simpson Memorial Institute of Medical Research, Ann Arbor, Michigan. The Dinner Meeting was held with Dr. M. T. MacEachern, Director Hospital Activities, American College of Surgeons, Chicago, as speaker. Dr. MacEachern chose as his subject, "Things to Remember in Planning the Dietary Department."

On Friday, Bertha Beecher, Christ Hospital, Cincinnati, Ohio, read a paper on "Administrative Problems." Other papers were as follows: "The Dietitian in the

Small Hospital"—Mrs. Kate Jackson Hard, Superintendent, Saginaw General. "Obesity"—Dr. L. H. Newburgh, Professor of Clinical Investigation, University of Michigan Hospital. Besides these papers there was a round table on diet therapy and a report of a committee on "Teaching of Student Nurses," followed by discussion.

On Friday afternoon at four o'clock, Esther Wright, Dietitian at Henry Ford Hospital, and her staff, entertained at tea at the Nurses Home. Guests of the Association were: From Ohio: Bertha Beecher, Helen Penharwood, Miss Puhl, Mary Lacy, Miss Eich, Miss Fenny, and Miss Bevens; from Chicago: Ann Boller; from Grand Rapids: Ella M. Eck, and Mary Harmon. From Saginaw: Mayme Lewis.

The American Medical Association meets in Minneapolis, June 11 to 15, 1928.

Minnesota Association of Hospital Dietitians held their March meeting at the Witt Market House, Minneapolis. Following the business meeting, Dr. Wetherby presented a paper on "Synthalin." A meat cutting demonstration by the Witt Market House followed. After the meeting the Association was entertained at dinner by their hosts. The February meeting was addressed by Miss Goldthorpe, "A Diabetic and his Diet;" Miss Rudbert, "Gibson Treatment for Nephritis; Miss Donahue, "Obesity and its Result;" Miss Newcomb, "High Vitamin Diets;" Miss Cook, "Anemia and Diet." The Happiness Bakery Company entertained the members at dinner following the meeting. The Association held their April meeting in the Club Rooms of the Jordon Stevens Wholesale Grocers. Dr. C. W. Watkins spoke on "Types of Anemia," and Dr. F. M. Siebert on "Amebiasis." A dinner and entertainment followed the meeting.

Agnes Kacerovsky was transferred from the U. S. Veterans' Hospital # 68, Minneapolis, Minn., to the U. S. Veterans' Hospital, at Washington, D.C., on February 1, 1928. She was made an Assistant Chief Dietitian at her new station.

Mae Donahue has resigned her position at St. Mary's Hospital, Minneapolis. She has gone to New York City to train with the Child's Restaurant Company. Blanche Kearney took her place at St. Mary's Hospital. Miss Kearney was formerly with the Veterans' Hospital at Fort Snelling, Minn.

Edna Zavitz was promoted and transferred to the Northern Pacific Hospital at Missouma, Montana, from the Northern Pacific Hospital in St. Paul. Norrita Netz has taken her place.

Nellie Englebrandt resigned as Assistant Dietitian at Mounds Park Sanitarium and accepted a position in Waterloo, Iowa. Edith Thaung took her place.

Helen Strong reported for duty at the U. S. Veterans' Hospital, Fort Snelling, Minneapolis, Minn., on March 1, 1928.

Selma Wirtenberger, dietitian at the Gillette State Childrens' Hospital, has been ill. It was necessary for her to undergo an operation for appendicitis.

Florence Tinkham who was formerly at the U. S. Veterans' Hospital # 68, Minneapolis, Minnesota, has been transferred to the U. S. Veterans' Hospital at Whipple Barracks, Arizona.

Miss Bros is now the Head Dietitian at St. Andrews Hospital, Minneapolis.

Lida Burrill who was formerly at the Newport Hospital, Rhode Island, was transferred to the U. S. Veterans' Hospital # 106, at Fort Snelling, Minn., in November, 1927.

The Northern Section of the California State Dietetic Association held a dinner meeting Monday night, April 9th at 7 o'clock at the Court Yard Tea Room, San Francisco. Dr. Samuel Lepkovasky, research associate of Dr. Herbert Evans of the University of California, discoverer of vitamin E and vitamin F, was the speaker. Vitamin E and vitamin F, these newly found substances, are closely related to race propagation according to Dr. Lepkovasky. If an animal is deprived of vitamin E, it is unable to multiply. Vitamin F is necessary for lactation.

Grace Eleanor Johnson, formerly at the Arrow Head Springs Hotel, Arrow Head

Springs, California, has accepted a position at the Scripps Metabolic Clinic at La Jolla, California.

Lois Nelson, who finished her student work at Highland Hospital, Oakland, California, the first of the year, is now assistant dietitian at the San Francisco Hospital, San Francisco.

Elizabeth Blakeslee, dietitian at Woodland Clinic, Woodland, California, has just returned from her vacation which she spent on a ranch in Mexico.

Elizabeth Starr, from the Methodist Hospital, Los Angeles, is consulting dietitian with Dr. H. Spiro, 601 Flood Building, San Francisco.

Mary Kohn and June McCord have resigned at Sutter Hospital, Sacramento, California, and expect to start on an extended automobile trip May 1st. The trip will include a tour of the Pacific Coast, Glacier National Park, Yellowstone Park, Colorado, North Dakota, and Iowa.

Charlotte Wenk, at one time assistant dietitian at the Sister's Hospital, Sacramento, sailed for her home in Hamburg, Germany, the first of the month, after having completed two years of dietetic work in California.

Esther Hawkins has given up her work as assistant at St. Luke's Hospital, San Francisco, to become dietitian at Mt. Zion Hospital, San Francisco. Gladys Henson, from the Santa Barbara Cottage Hospital, Santa Barbara, California, has taken Miss Hawkins's place at St. Luke's Hospital.

Lois Cameron is dietitian at the Providence Hospital, Oakland, California. Miss Cameron completed her student work at Fairmount Hospital, San Leandro, California, in February.

Phila Henson will begin work at the St. Francis Hospital, San Francisco, as assistant dietitian, April 23rd.

Connecticut Dietetic Association. The winter meeting was held in Bridgeport on February 11. Miss Ruth Bowden, of the California Fruit Growers Exchange talked on certain phases of normal nutrition. Miss Hunter, the president, is arranging a separate meeting to discuss per capita costs.

The annual meeting of the British Columbia Dietetic Association was held in Vancouver on April 18, 1928.

Officers were appointed for the ensuing year as follows: President, Ethel Pipes, Dietitian, Vancouver General Hospital; Vice-President, Emma Saunders, Instructor of Home Economics; Secretary-Treasurer, E. Warner, Nutritional Department, Fraser Valley Dairy. Those appointed on special committees were: Esther Kinney, Consulting Dietitian; Edna Pierson, Dietitian, St. Paul's Hospital; M. Scovil, Dietitian, Shaunessy Military Hospital; Maud M. Trood de Twornicka, a former dietitian.

Reports were given of work during the past year by the retiring president, Miss Hansford, and the Secretary-Treasurer, Miss Saunders. The reports showed that there had been a good attendance at the meetings throughout the year. Attention was drawn to the change in programs which had proven very successful; a special feature is made of the quarterly meetings. These meetings take the form of a dinner or evening meeting with a prominent speaker to address the Association, while the intervening meetings were devoted to convention reports, round table discussions with extracts from leading journals, and social evenings.

During the year the Association has supplied cream daily for a small boy on a diabetic diet with a very low carbohydrate tolerance.

A special quarterly meeting is now being planned for June. It is to be held on a Saturday evening so as to make it possible for dietitians from other parts of the Province to attend.

The New York Association of Dietitians. The February meeting was held at the Russell Sage Foundation. A representative of the firm of Horwarth and Horwarth, who specialize in hotel accounting, spoke on "The Control of Food." He demonstrated the use of printed forms which are in common use in the checking of food costs against sales in restaurants.

The March meeting was held at the Montefiore Hospital. About forty-five members were guests of the hospital for

supper. Many others who were unable to attend the supper came to the meeting which followed; over seventy were in attendance. Mr. Jacob Goodfriend, Assistant General Superintendent of the Hospital spoke on "Food Service from the Point of View of the Patient." Dr. David Marine, Director of Laboratories at Montefiore, spoke on "Some Aspects of the Tonsil and Adenoid Problem from the Nutritional Point of View." The speaker discussed the condition known as status lymphaticus or lymphoid overgrowth, its prevalence and seriousness; time and further study may show it to be caused by a nutritional deficiency or disturbance. Infants fed high carbohydrate diets often show some abnormality or sequence of abnormalities of the suprarenals. Defects of nutrition are immediately related to loss or partial loss of function or some function of the suprarenals and sex glands. This deficiency may be in the nature of a hormone or an accessory substance other than the four known vitamins.

The Quebec Dietetic Association, although small, has its regular monthly meetings which are well attended. On February 8th, Miss B. M. Philp, Head of School of Household Science, Macdonald College, was elected Honorary President, Miss E. L. Hunter, re-elected President and Miss I. T. Carpenter, Secretary Treasurer. The office of Vice President has not yet been filled. At the March meeting Mr. G. B. Clarke, General Secretary of the Family Welfare Association was the speaker of the evening, taking as his subject "Can the dietitian help the low wage family."

Miss MacMillan of the Sun Life Assurance Company gave a very interesting talk on "The Psychology of Employment" at the April meeting.

Friends of Miss Gwen Taylor, assistant dietitian at Montreal General Hospital, will be pleased to hear that she is rapidly recovering from her recent operation.

The Southeastern Michigan Dietetic Association, under the guidance of the President, S. Margaret Gillam, has been having a very active and interesting season. The meetings were spent as follows:

November—Meeting was devoted entirely to business.

December—Round table with discussions of the "Training of the Student Nurse" and "The Figuring of Food Costs."

January—The Association met for a dinner at the Michigan Union at Ann Arbor at which Dr. Hindhede, Food Commissioner of Denmark, was the guest of honor. Following the dinner, the Association attended the illustrated lecture by Dr. Hindhede.

February—Meeting was held at the Woman's City Club and Miss Lucea Hejinian, Nutritionist at the Merrill-Palmer School, talked on "New Facts in Child Feeding."

March—Dr. Richard McKean discussed the "Treatment of the Diabetic in the Hospital and in the Home."

April—Two day meeting with the Michigan Hospital Association, held April 19th and 20th at the Book-Cadillac Hotel, Detroit.

May—"Nutrition in the Public Health Field," by Dr. Sundwall.

June—Social.

Rochester Dietetics Association. At the February meeting, Dr. Eugene Du Bois spoke on "High and Low Protein Diets." Thirty members attended a dinner previous to the meeting. One hundred and fifty persons were in attendance at the lecture held in the ampitheatre of the Strong Memorial Hospital.

Massachusetts Dietetic Association. At the February meeting, Etta Sadow, Director of Home Economics Bureau, District Service, Federated Jewish Charities, Boston, gave an interesting and instructive talk on "Jewish Ceremonials and Food Customs." Miss Sadow had an exhibit of all the various articies used in the observance of the feasts of the Jewish Religion.

At the March meeting, Dr. Joseph C. Aub, Associate in Medicine, Massachusetts General Hospital, Boston, lectured on "Mineral Metabolism." Many interesting charts and slides, showing various studies made in mineral metabolism by Dr. Aub and his associates, were also exhibited.

In March a field trip to the Wear-Ever Aluminum Utensil Company display rooms in the Statler building, was enjoyed by a large group from the Massachusetts Dietetic Association. Besides the interest shown in the cooking utensils and the cooking of food without water, much interest was also shown in the painted aluminum furniture. This furniture besides having as graceful lines as wooden furniture and just as good a painted finish, has also a greater durability. It is in much demand now for ocean steamers, college dormitories, office furniture, etc. Without lifting it, one would almost certainly say that an aluminum chair, mahogany stained, was the genuine article.

At the April meeting a dinner was given with Ruth Wheeler, Ph.D., Professor of Nutrition and Physiology, Vassar College, Poughkeepsie, New York, as guest of honor. The dinner was well attended, not only by dietitians from all fields of nutrition, but also by representatives from the Nursing field. Dr. Wheeler spoke on "Teaching Nurses Dietetics and Diet Therapy." A stimulating general discussion followed Dr. Wheeler's address.

In April, Miss Carlson, Dietitian with the Meat Packers Association, gave a demonstration on cuts of meat suitable for institutions. The economy cuts now so popular were displayed. Through the courtesy of Batchelder & Snyder Company, where the demonstration was held, the dietitians were conducted through the plant and the work and methods fully explained.

Among the members of the Massachusetts Dietetic Association who are planning a trip abroad this Spring and Summer are Hilda French, New England Deaconess Hospital, Marion Floyd, Massachusetts General Hospital, Doris Keller, formerly of Peter Bent Brigham Hospital, and Quindara Oliver, formerly with Thompson Spa, Boston.

Helen Brown, of the New England Hospital for Women and Children, Boston, is planning to spend two months visiting on the west coast.

Among the recently announced engagements are: Quindara Oliver to Chester Dodge, the wedding date having been set for June, shortly after Miss Oliver's return from abroad; and Thelma Price, Boston City Hospital to Sam Camber.

Announcement of the birth of a son to Mr. and Mrs. Max Slater (Pauline Berman) has been received.

Jean Reyner has resigned from the Boston Dispensary and is to be married on the twenty-fifth of June.

Margery Burr has been appointed as Assistant Dietitian at the Boston City Hospital.

Marion Porter has gone to the New England Deaconess Hospital as Assistant Dietitian.

Helen Heywood has been appointed to succeed Faith Taylor, who has resigned as Dietitian on the Metabolism Ward, Thorndike Memorial Building, Boston City Hospital.

Therza E. Northrop has been appointed as Assistant Dietitian at the New England Hospital for Women and Children.

Frances Stern has returned from the Coast and has resumed her duties at the Boston Dispensary.

Philadelphia Dietetics Association. On March 27th the Association had a dinner conference at the Womens' City Club where Miss Mary B. Reeves, Manager, Industrial and School Savings, The Philadelphia Saving Fund Society, talked to the members on "Banking and Investments." Miss Reeves advised savings accounts first, sound investments next, investments in stocks, last. Miss Reeves answered many questions and gave valuable information and help to those asking for advice. The meeting proved very interesting and gave us much food for thought.

April 27th, Mr. Rowland W. White, President of the Colonnade Lunch System gave a most outstanding lecture on "Equipment." The Association met at the Colonnade Lunch Room in the Bankers' Trust Building, Juniper and Walnut Streets. A short business meeting preceded the lecture. Reports for the Year 1927–1928 were made and the Membership Committee announced the admission of thirty-seven new members,

representing seventeen colleges and eight universities. New Officers for the Year 1928–1929 were voted upon and the following elected:

President: Rose T. Baker, Assistant Professor Home Economics, Drexel Institute.

Vice-President: Zelvetta E. Lemmon, Division School Lunches.

Secretary: Elizabeth Miller, Philadelphia General Hospital.

Treasurer: Marjorie E. Bacheller, Temple University.

Executive Committee: Pauline Robinson, First National Bank, term expires April, 1929; Mildred E. Dickson, at home, term expires April, 1930; Leta M. Maher, Friends Select School, term expires April, 1931.

Mr. White's lecture followed an outline submitted by several of the members of the Association which called for a discussion of subjects and problems constantly being met by all administrative dietitians. After the lecture, rounds were made and the equipment in both the cafeteria and kitchen was inspected and points of specific interest were discussed by Mr. White.

The next meeting of the Association is to be on May 16th at the New Edison Building of the Philadelphia Electric Company. The subject will be "Electricity." The Philadelphia Home Economics Association will join the Association in this meeting.

During the past winter, Mrs. Anna L. DePlanter Bowes, Nutrition Director of the Child Health Society has held monthly nutrition conferences to which she has invited all those interested in the field. The purpose has been to keep in touch with new methods, discoveries and experiments in diet therapy; articles in various medical and dietetic journals have been abstracted and presented at the meetings, copies of the abstracts being given to those present. A great deal of interest has been developed and the meetings have been very valuable and helpful to those who have been fortunate enough to have been able to attend.

Anna J. McInnes has recently accepted the position of Assistant Dietitian at Garfield Memorial Hospital, Washington D.C.

Pearl C. Wright has taken charge of the Cafeteria in the new building of the Public Library on the Parkway. Miss Wright has been for several years at the Central Branch Y. W. C. A., 18th and Arch Streets.

Marjorie Bacheller, Cafeteria Director, and Gertrude Peabody, Director of Home Economics, Temple University, are planning a motor trip in England for their summer vacation.

Dorothy W. Gaunt has recently resigned her position at the Episcopal Hospital and is convalescing at her home in Holyoke, Mass.

Bessie Tippet of Abington Memorial Hospital is planning a two months vacation abroad.

Sister Emma Keppert, Lankenaw Hospital, is in New York City convalescing from her recent illness.

Mrs. Helen C. Barcalow is dietitian at the College Club, 1300 Spruce Street.

Mamie T. Kirk, who recently resigned as Assistant Dietitian at Jefferson Hospital, is studying for her degree at Drexel Institute.

Martha M. Stockwell who has been studying for the past year at Teachers' College, Columbia University, has accepted the position of dietitian at the Babies' Hospital, 7th and Delancey Streets.

Ruth V. Silvius and Ruth C. Snyder have recently completed the Student Dietitians' Course at the Pennsylvania Hospital. Miss Silvius goes to the Coatesville Hospital, Coatesville, Pa., and Miss Snyder will remain as one of Helen E. Gilson's assistants.

Ontario Dietetic Association has carried out the program of meetings as planned in the fall, following the Mayo Lecture Course. Some very interesting papers were given by Miss Laird, Dr. Willard and Dr. Bert of the University of Toronto.

On April 30th the annual dinner of the Association was held at the Gray Gables Tea Rooms. This was enjoyed by about 30 members. We expect that the membership will be increased in another year, several new graduates having started in the profession.

Jean McCrimmon, a former member, has returned from Montreal where she was dietitian in charge of the Childs' Restaurants. She is now with the L. Eaton Company, in their "Georgian Room."

Annette Walker has left Chicago to accept

a position in the United States Veterans' Hospital, Jefferson Barracks, Missouri.

Edith Beshore has changed her address from Chicago to 843 Traction Avenue, Los Angeles, California.

The Washington Branch of the American Dietetic Association held the February meeting at the Wilsonian Hotel, Seattle, Washington. Twenty-two were present. Following the dinner and business meeting Mr. Weil, member of a Seattle Hotel supply firm gave a very interesting and instructive talk on the arts of pottery and silverware manufacture, explaining in detail its composition, methods of ornamentation and many other points of interest, also giving valuable suggestions for the purchasing of hotel china and silver.

On March 10 the Association met with the Western section of the Washington state branch of the Home Economics Association at the Tacoma Hotel, Tacoma, Washington. The entire program was most interesting. Talks of especial interest were those of Dr. Rich, Orthopedic Surgeon of Tacoma General Hospital, Tacoma, Washington and Miss Elizabeth Rivers of the University of Washington. Dr. Rich's subject was "The Danger of the Fat Haters" in which he expressed the belief that fat plays a definite part in the prevention of tuberculosis, especially in children. Miss Rivers' subject was "Diagnostic Tests in Home Economics" and was especially interesting to teachers since she stressed the construction and use of objective tests to replace the usual form of examination questions.

The Tacoma members of the Association were hostesses for the social meeting on April 27, at the Oyster Shell on the High Line Tacoma Drive. Twenty were present. Following the dinner the evening was devoted to bridge. Everyone expressed her thanks to the Tacoma members for a most enjoyable time.

The Course for Dietitian Internes sponsored by the Washington Branch is now quite well established. The hospitals coöperating in offering this course are Tacoma General Hospital, Tacoma, Washington, Seattle General Hospital and Children's Orthopedic Hospital of Seattle, the former giving 2½ months respectively and the latter one month.

The Baltimore Dietetic Association met jointly with the Baltimore Home Economics Association in April at the State Normal School in Towson, Maryland. Dr. C. Ford Langworthy of the United States Department of Agriculture, Bureau of Home Economics, spoke on the "History and Development of Food and Diet." Dr. Langworthy showed also a very interesting portfolio containing historical home economics data.

Olive Larson has taken a position as assistant in the Baltimore City Hospitals.

A meeting with the Washington Dietetic Association is being arranged for the last week in May, to discuss plans for the coming convention in October.

Hospital Kitchen, Equipment for a. Ruth M. Cooley..... .08
Hotel Food Department, The Operation of a. Arnold Shircliffe..... .12
Inorganic Salt Metabolism, Studies of. Walter Bauer, M.D., and Joseph Aub, M.D.. .18
Institution Food Departments, Equipment for. Owen T. Webber..... .14
Job Analysis, Residence Hall. Elizabeth Bemis, Lena Cooper and Mary Walton..... .10
Karell Diet, The, and a Modified Karell Diet. Edward G. Bannick, M.D., and Florence H. Smith, B.S..... .12
Ketosis, Metabolism of Carbohydrates in Relation to. Philip A. Schaffer, M.D..... .15
Liver, Preparation of, for Patients with Pernicious Anemia. Hazel Bradburn..... .10
Marketing and Menu Planning. M. Faith McAuley..... .15
Medical Student, Practical Problems in Dietetics for the. Margaret McGovern..... .08
Nephritis and Hypertension, The Relation of the Diet to. Norman M. Keith, M.D., and Florence H. Smith, B.S..... .15
Normal People, Certain Tendencies of Modern Hospital Dietaries for. Reginald Fitz and Amalia Lautz..... .10
Nutrition, Rôle of, in Health Education. Clair E. Turner, C.P.H..... .12
Nutrition Round Table of the Massachusetts Dietetic Association. Jean Reyner, B.S. .08
Nutrition Worker in the Hospital. Helen Hubbell..... .15
Nutritive Study, A, on an Indian Reservation. Jessie Anderson Stene, M.A. and Lydia Roberts, S.M..... .12
Out-Patient, The Dietitian and the. Arthur S. Strauss, M.D..... .12
Peanut, Chemistry of the: A Clinical Study. Florence H. Smith and Russell M. Wilder. .15
Peanut Meal, The Composition of, and Its Use as a Diabetic Food. Margaret Mumford Neal..... .15
Perishable Foods, Fundamental Buying Principles as Applied to. Frederick S. Snyder.. .12
Pernicious Anemia, Adjusting the Diet to the Patient with. Thelma Tubbs, B.S. and Elizabeth Bellinger, B.S..... .12
Personnel Management, The Psychology of. Edgar James Swift..... .22
President's Address. Florence H. Smith..... .06
President's Address. Ruth Wheeler..... .10
Reproduction, The Effect of Diet Upon. Dr. Donald Macomber..... .18
Student Dietitians in Hospitals, Standardization of Courses for. Section on Education. .10
Student Nurses, Bedside Teaching of. Helen J. Hubbell..... .15
Student Nurses, The Examination of, in Dietetics. Sister M. Domitilla, B.S., R.N... .12
Ulcer of the Stomach and Duodenum, Medical Treatment of. Milton M. Portis..... .10
Vitamin Structure, Recent Developments in. Walter G. Eddy..... .10